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14. ABSTRACT
This instrumentation grant was used to purchase state-of-the-art, high-resolution video eye tracker that can be used to monitor the subjects' eye movements as they perform visual search tasks, such as searching a visual image for a camouflaged target. The eye tracker has been fully functional for approximately a year and a half now, and has been functioning properly during this entire period. We have been using this valuable piece of equipment in our experiments both inside the magnetic resonance (MR) scanner as well as outside the scanner. Measuring subjects' eye movements in this fashion allows us to not only study the role of changes in eye position and shifts of visual

15. SUBJECT TERMS
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Report Title

Final Report: MR-Compatible Integrated Eye Tracking System

ABSTRACT

This instrumentation grant was used to purchase state-of-the-art, high-resolution video eye tracker that can be used to monitor the subjects' eye movements as they perform visual search tasks, such as searching a visual image for a camouflaged target. The eye tracker has been fully functional for approximately a year and a half now, and has been functioning properly during this entire period. We have been using this valuable piece of equipment in our experiments both inside the magnetic resonance (MR) scanner as well as outside the scanner. Measuring subjects' eye movements in this fashion allows us to not only study the role of changes in eye position and shifts of visual attention on visual perception, but will also helps us factor out potentially confounding effects of eye movements to the observed brain activity.

Enter List of papers submitted or published that acknowledge ARO support from the start of the project to the date of this printing. List the papers, including journal references, in the following categories:

(a) Papers published in peer-reviewed journals (N/A for none)

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TOTAL:

Number of Papers published in peer-reviewed journals:

(b) Papers published in non-peer-reviewed journals (N/A for none)

Received	Paper

TOTAL:

Number of Papers published in non peer-reviewed journals:

(c) Presentations

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Number of Presentations: 0.00

Non Peer-Reviewed Conference Proceeding publications (other than abstracts):

Received Paper

TOTAL:

Number of Non Peer-Reviewed Conference Proceeding publications (other than abstracts):

Peer-Reviewed Conference Proceeding publications (other than abstracts):

Received Paper

TOTAL:

Number of Peer-Reviewed Conference Proceeding publications (other than abstracts):

(d) Manuscripts

Received Paper

TOTAL:

Number of Manuscripts:

Books

Received Book

TOTAL:

Received Book Chapter

TOTAL:

Patents Submitted

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Patents Awarded

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Awards

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Graduate Students

NAME	PERCENT_SUPPORTED

FTE Equivalent:
Total Number:

Names of Post Doctorates

NAME	PERCENT_SUPPORTED

FTE Equivalent:
Total Number:

Names of Faculty Supported

NAME	PERCENT_SUPPORTED

FTE Equivalent:
Total Number:

Names of Under Graduate students supported

NAME	PERCENT_SUPPORTED

FTE Equivalent:
Total Number:

Student Metrics

This section only applies to graduating undergraduates supported by this agreement in this reporting period

The number of undergraduates funded by this agreement who graduated during this period: 0.00

The number of undergraduates funded by this agreement who graduated during this period with a degree in science, mathematics, engineering, or technology fields:..... 0.00

The number of undergraduates funded by your agreement who graduated during this period and will continue to pursue a graduate or Ph.D. degree in science, mathematics, engineering, or technology fields:..... 0.00

Number of graduating undergraduates who achieved a 3.5 GPA to 4.0 (4.0 max scale):..... 0.00

Number of graduating undergraduates funded by a DoD funded Center of Excellence grant for Education, Research and Engineering:..... 0.00

The number of undergraduates funded by your agreement who graduated during this period and intend to work for the Department of Defense 0.00

The number of undergraduates funded by your agreement who graduated during this period and will receive scholarships or fellowships for further studies in science, mathematics, engineering or technology fields: 0.00

Names of Personnel receiving masters degrees

NAME

Total Number:

Names of personnel receiving PHDs

NAME

Total Number:

Names of other research staff

NAME	PERCENT_SUPPORTED

FTE Equivalent:
Total Number:

Sub Contractors (DD882)

Inventions (DD882)

Scientific Progress

Using the video eye tracker, we have collected data during camouflage-breaking, as well as learning to break camouflage (or camouflage learning). We have characterized the various properties of eye movements during each of properties of each of these tasks. A particularly notable discovery is that the a type of gaze-steadying eye movements called microsaccades become more frequent during camouflage learning, but becomes less frequent after the task is learned (i.e., after the task performance reaches its asymptotic phase.) Thus, the frequency of occurrence of microsaccades roughly follows a inverted 'V' pattern during camouflage learning. We have also found that this pattern of change occurs in other forms of perceptual learning involving visual search, such as training to diagnose anomalies in screening mammograms.

Technology Transfer

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